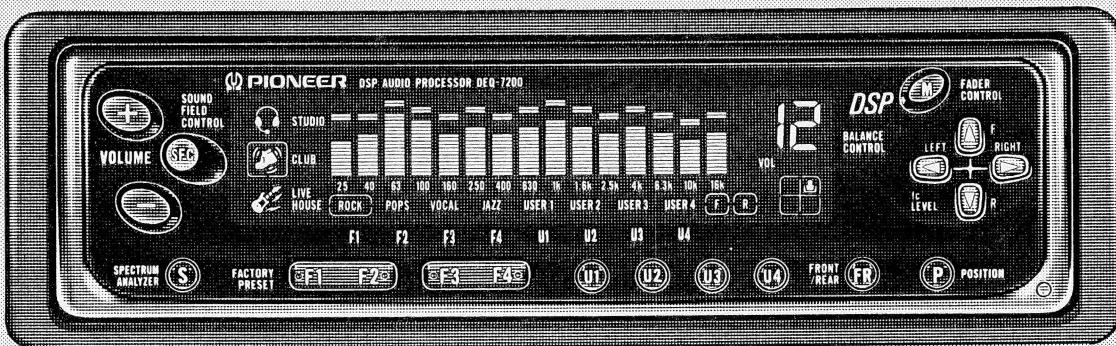


DSP AUDIO PROCESSOR PROCESSEUR AUDIO DSP

OWNER'S MANUAL MODE D'EMPLOI

Thank you for purchasing this PIONEER product.
Before attempting operation, be sure to read
this manual.

Nous vous remercions d'avoir acheté cet
appareil PIONEER. Avant de l'utiliser, prendre
soin de lire ce manuel.



PIONEER®
The Art of Entertainment

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ENGLISH

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FRANÇAIS

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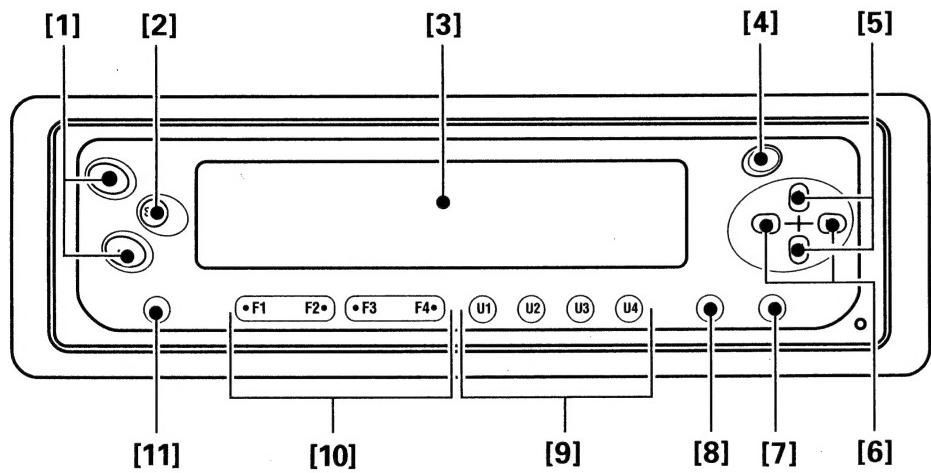


Fig. 1

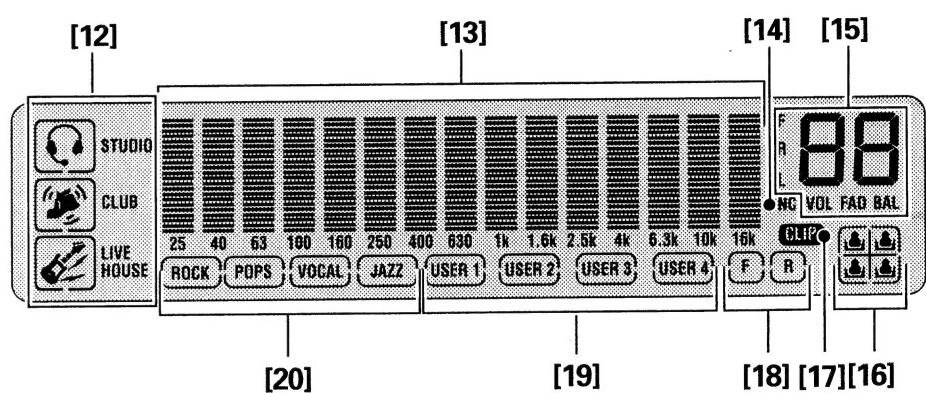


Fig. 2



Dear Customer:

Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion—and, most importantly, without affecting your sensitive hearing.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing. Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:

- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:

- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

We Want You Listening For A Lifetime

Used wisely, your new sound equipment will provide a lifetime of fun and enjoyment. Since hearing damage from loud noise is often undetectable until it is too late, this manufacturer and the Electronic Industries Association's Consumer Electronics Group recommend you avoid prolonged exposure to excessive noise. This list of sound levels is included for your protection.

Decibel Level	Example
30	Quiet library, soft whispers
40	Living room, refrigerator, bedroom away from traffic
50	Light traffic, normal conversation, quiet office
60	Air conditioner at 20 feet, sewing machine
70	Vacuum cleaner, hair dryer, noisy restaurant
80	Average city traffic, garbage disposals, alarm clock at two feet.

THE FOLLOWING NOISES CAN BE DANGEROUS UNDER CONSTANT EXPOSURE

90	Subway, motorcycle, truck traffic, lawn mower
100	Garbage truck, chain saw, pneumatic drill
120	Rock band concert in front of speakers, thunderclap
140	Gunshot blast, jet plane
180	Rocket launching pad

Information courtesy of the Deafness Research Foundation.



Precautions

In case of trouble

When the unit does not operate properly, contact your dealer or the nearest authorized PIONEER Service Station.

In the United States please call 1-800-421-1404 for product information or your nearest service center or 1-800-228-7221 for information on parts.

Never remove the top case of the unit to attempt check or repairs.

Important

The serial number of this device is located on the bottom of the unit. For your own security and convenience, be sure to record this number on the enclosed warranty card.

Memory Backup

When the car battery is removed or power cord of this unit is disconnected, and the power is not supplied for about 3 days, the settings of the position and equalizer curves, etc. are initialized.

Connecting the Units

Note:

- This unit is for vehicles with a 12-volt battery and negative grounding. Before installing it in a recreational vehicle, truck, or bus, check the battery voltage.
- To avoid shorts in the electrical system, be sure to disconnect the battery \ominus cable before beginning installation.
- Refer to the owner's manual for details on connecting the power amp and other units, then make connections correctly.
- Secure the wiring with cable clamps or adhesive tape. To protect the wiring, wrap adhesive tape around them where they lie against metal parts.
- Route and secure all wiring so it cannot touch any moving parts, such as the gear shift, handbrake, and seat rails. Do not route wiring in places that get hot, such as near the heater outlet. If the insulation of the wiring melts or gets torn, there is a danger of the wiring short-circuiting to the vehicle body.
- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.
- Do not shorten any leads. If you do, the protection circuit may fail to work when it should.

Connection Diagram

(Connecting to a head unit having front and rear inputs)

(Fig. 3)

1. Rear output
2. Front output
3. External input
4. Connecting cord with RCA pin plugs (sold separately)
Connect red to red and white to white.
5. External (audio) output
6. Front input
7. Rear input
8. Head unit (Ex. DEH-P815)
In this connection, the MAIN IN switch in the head unit should be set to ON.
9. Blue
To system control terminals of the head unit.
10. Blue
11. Front speakers
12. Rear speakers
13. Black (ground)
To vehicle (metal) body.
14. Yellow
To lighting switch terminal.
15. Orange
To terminal always supplied with power regardless of ignition switch position.
16. Fuse resistor
17. Fuse holder

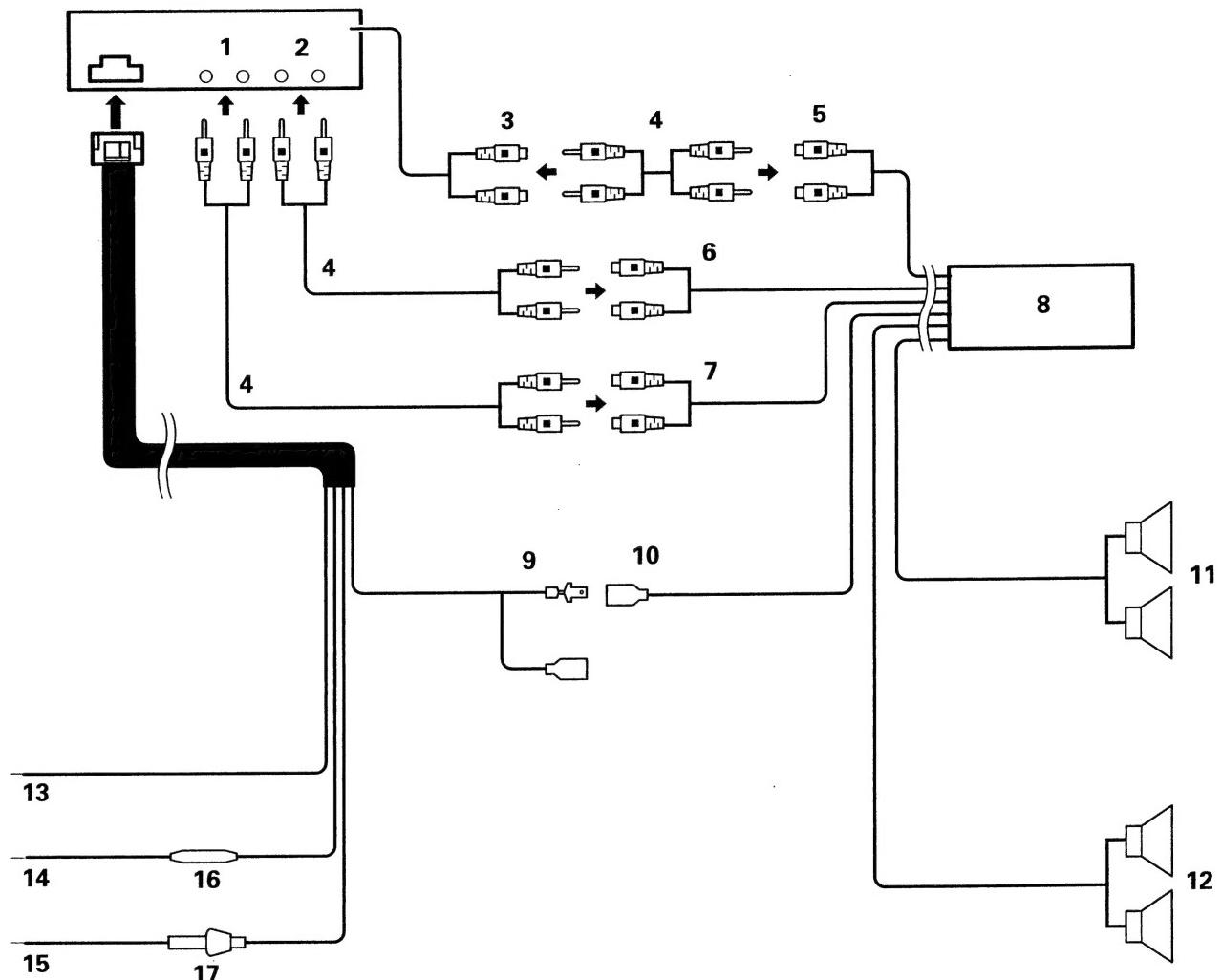


Fig. 3

Connection Diagram

(Connecting to a head unit which does not have front and rear inputs)
(Fig. 4)

1. Rear output
2. Front output
3. External input
4. Connecting cord with RCA pin plugs (sold separately)
 Connect red to red and white to white.
5. Rear output
6. Front output
 Not used in this connection.
7. Sub-woofer output
 Not used in this connection.
8. Head unit (Ex. KEH-P8200)
9. Blue
 To system control terminals of the head unit and power amp.
10. Blue
11. Power amp (sold separately)
12. Front speakers
13. Rear speakers
14. Black (ground)
 To vehicle (metal) body.
15. Yellow
 To lighting switch terminal.
16. Orange
 To terminal always supplied with power regardless of ignition switch position.
17. Fuse resistor
18. Fuse holder

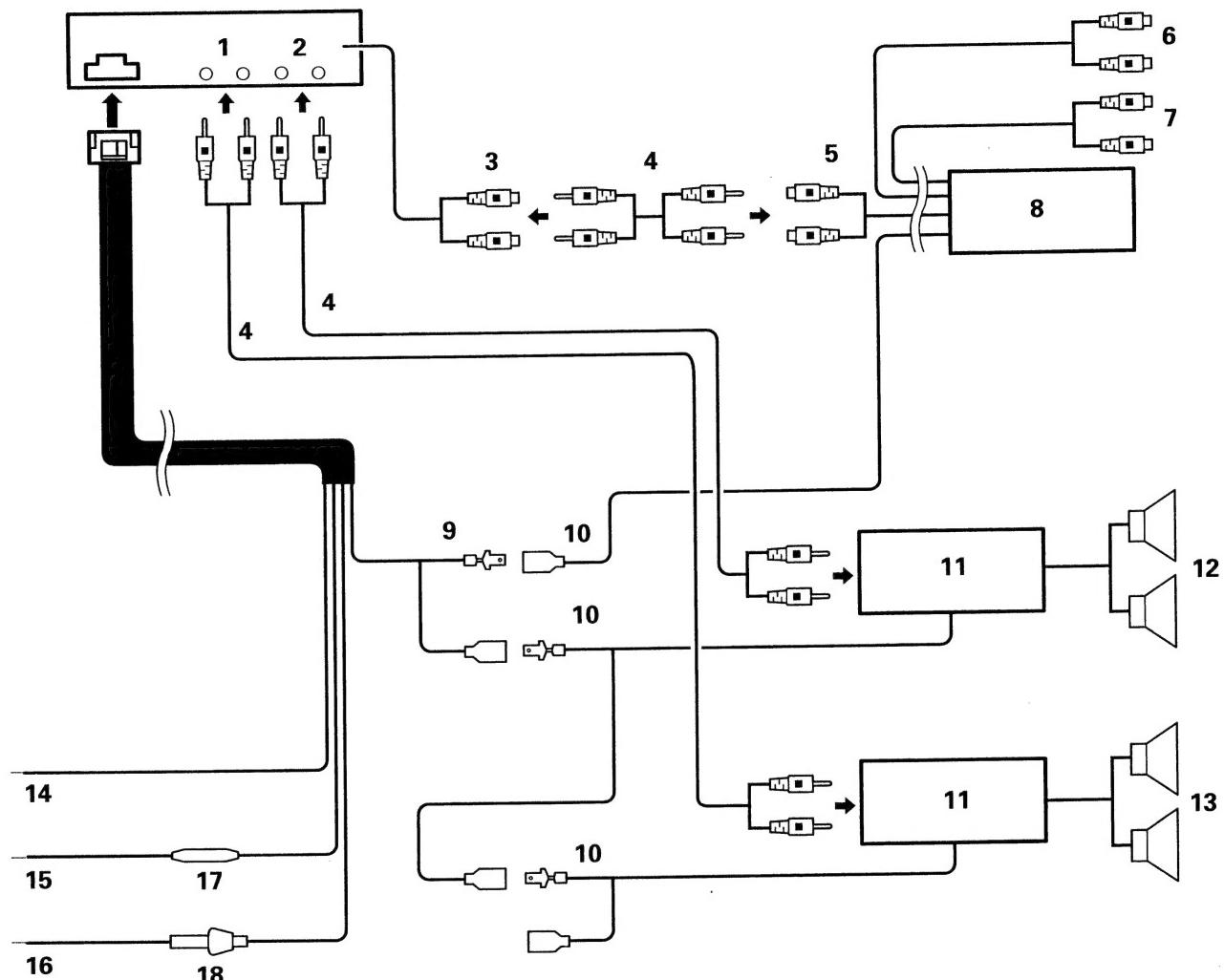


Fig. 4

Installation

Note:

- Before finally installing the unit, connect the wiring temporarily and make sure it is all connected up properly and the unit and the system work properly.
- Use only the parts included with the unit to ensure proper installation. The use of unauthorized parts can cause malfunctions.
- Consult with your nearest dealer if installation requires the drilling of holes or other modifications of the vehicle.
- Install the unit where it does not get in the driver's way and cannot injure the passenger if there is a sudden stop, like an emergency stop.

DIN Front/Rear-mount

This unit can be properly installed either from "Front" (conventional DIN Front-mount) or "Rear" (DIN Rear-mount) installation, utilizing threaded screw holes at the sides of unit chassis. For details, refer to the following illustrated installation methods.

DIN Front-mount

Installation with the rubber bush (Fig. 5)

Installation without the rubber bush (Fig. 6)

1. Dashboard

2. Holder

After inserting the holder into the dashboard, then select the appropriate tabs according to the thickness of the dashboard material and bend them.

3. Rubber bush

4. Screw

5. Nut (5 mm)

6. Drill a 5.5 — 6.0 mm diameter hole.

7. Screw (5 x 16 mm)

8. Strap

Be sure to use the strap to secure the back of the unit in place. The strap can be bend by hand to the desired angle.

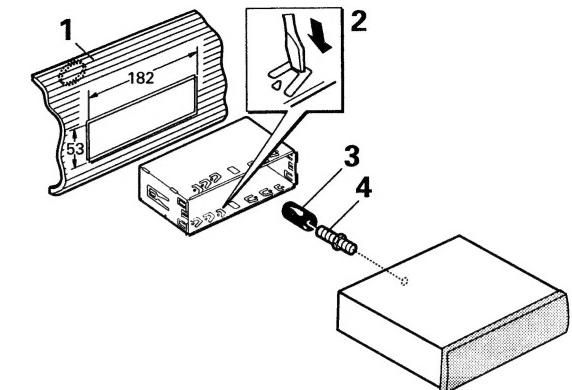


Fig. 5

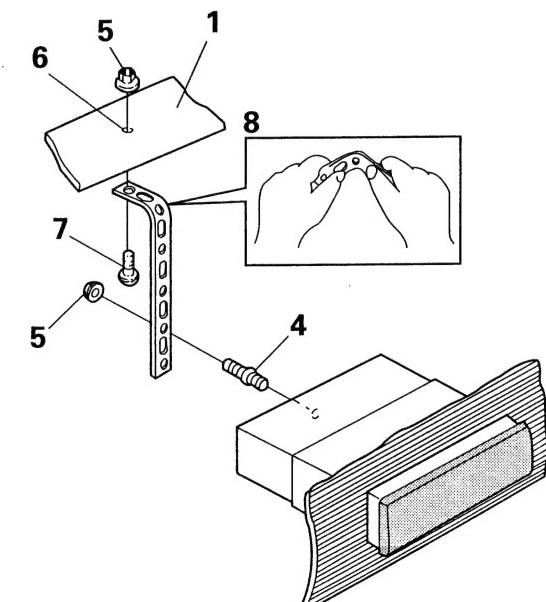


Fig. 6

Removing the unit (Fig. 7) (Fig. 8)

9. Frame
10. Insert the release pin into the hole in the bottom of the frame and pull out to remove the frame.
(When reattaching the frame, point the side with a groove downwards and attach it.)
11. Insert the supplied extraction keys into the unit, as shown in the figure, until they click into place. Keeping the keys pressed against the sides of the unit, pull the unit out.

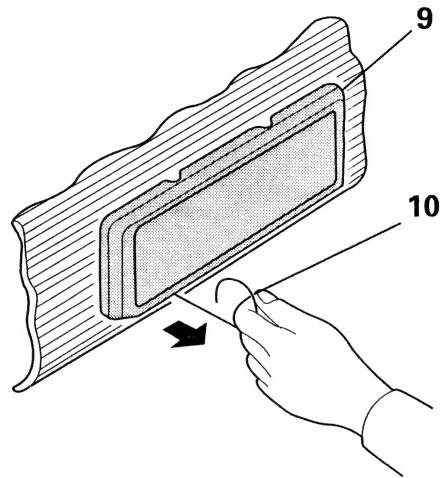


Fig. 7

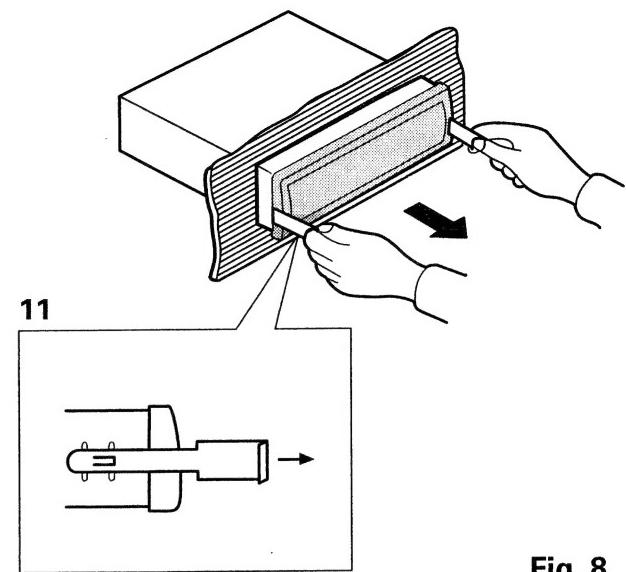


Fig. 8

DIN Rear-mount

Installation using the screw holes on the sides of the unit

1. Remove the frame. (Fig. 9)

12. Frame

13. Insert the release pin into the hole in the bottom of the frame and pull out to remove the frame.

(When reattaching the frame, point the side with a groove downwards and attach it.)

2. Fastening the unit to the factory radio mounting bracket. (Fig. 10) (Fig. 11)

14. Select a position where the screw holes of the bracket and the screw holes of the head unit become aligned (are fitted), and tighten the screws at 2 places on each side. Use either truss screws (5 x 8 mm) or flush surface screws (5 x 9 mm), depending on the shape of the screw holes in the bracket.

15. Screw

16. Factory radio mounting bracket

17. Dashboard or Console

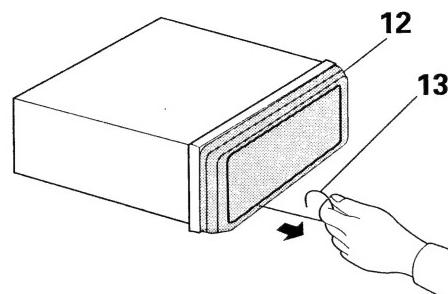


Fig. 9

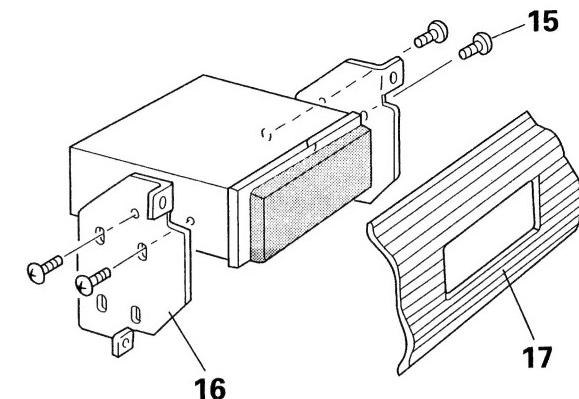


Fig. 11

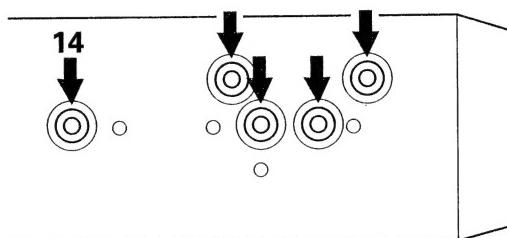


Fig. 10

Using the Clear Button

Pressing the Clear button will reset the microprocessor. Press the Clear button in the following cases:

- When using the unit for the first time after connecting it.
- When there is a misoperation.
- When the display indicates a misoperation.

Press the Clear button with the tip of a pen, etc. (Fig. 12)

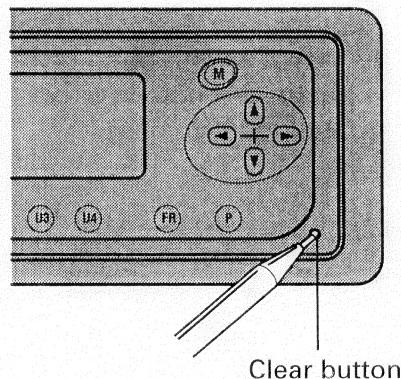


Fig. 12

Changing the Spectrum Analyzer Display

Parts Identification

Fig. 1

- [3] Display
[11] Spectrum analyzer display selector button

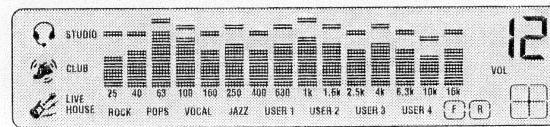
Fig. 2

- [13] Operation display

Each time button [11] is pressed, the operation display [13] changes in the sequence from 1, 2, 3, 4, 5 then 6.

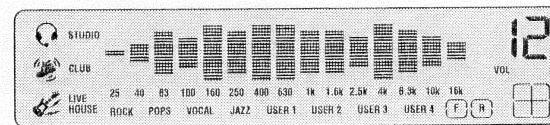
MODE 1

This indicates the music energy level of each frequency by the height of the bar for each band, while also showing a temporary indication of level peaks.



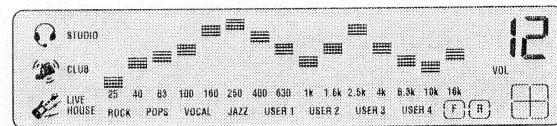
MODE 2

This indicates the music energy level of each frequency by width.



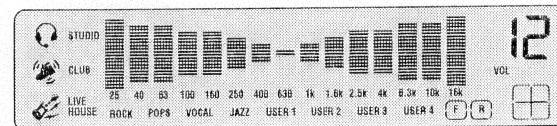
MODE 3

This indicates the music energy level of each frequency by the height of the bar for each band.



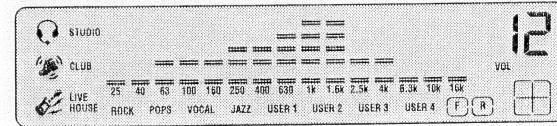
MODE 4

The sound intensity is displayed in a radial shape.



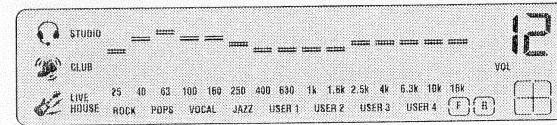
MODE 5

This displays an image giving the impression of traveling along a winding road. Speed changes depending on the music energy level.



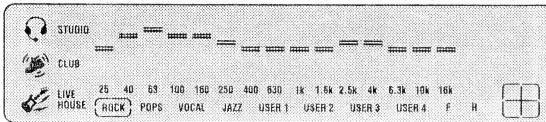
MODE 6

The current equalizer curve is displayed.



Demo Mode

When the audio signal is not input for more than 20 seconds, the display automatically switches to the demo mode. The display is restored when an audio signal is input to this unit.



Setting the Head Unit

Parts Identification

Fig 1

- [1] Volume buttons
- [3] Display

Fig. 2

- [17] Sound clip indicator

When this unit is connected to the head unit, the volume, balance and fader can be adjusted with this unit. Before operating this unit, set the head unit as follows.

1. Press the (-) side of buttons [1] to set the volume of the unit to "VOL 0".
2. Set the volume of the head unit to "VOL 23".
3. Set the fader and balance of the head unit to center position.
- To adjust the volume, fader and balance on the head unit, refer to the Owner's Manual that accompanies the head unit.

Note:

- When the head unit volume is excessive (excessive input to the unit), "CLIP" [17] will be indicated on the display as a warning. In this case, turn the volume on the head unit down to the point where "CLIP" is no longer displayed.
- When you feel a distortion in the sound even though "CLIP" is not indicated on the display, turn the volume on the head unit down.
- The volume's set point is not indicated on the display when you adjust the volume on the head unit by tuning the volume control. In this case, set the volume control on the head unit to the position illustrated below, in accordance with step 2. (Fig. 13)

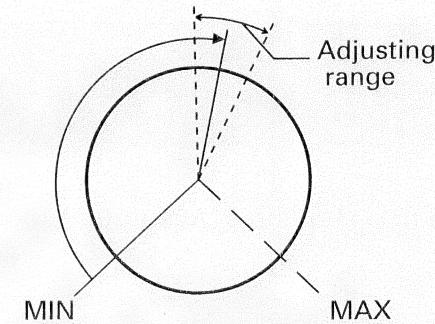


Fig. 13

Adjusting the Volume

Parts Identification

Fig. 1

- [1] Volume buttons
- [3] Display

Fig. 2

- [15] Numeric display

Pressing the (+) side of buttons [1] increases the volume, while the (-) side of buttons [1] decreases it.
(Numeric display [15] shows "VOL 0 — VOL 30".)

Note:

- Always keep the volume inside the car at a level that allows you to hear outside sounds.

Adjusting the Listening Position

One of the conditions for reproduction of more natural music is to "clearly define the sound image positioning (listen to music at the center of the sound field)".

The position selector function appropriately adjusts the delay time and level of the sound from each speaker according to the seat position(s) and the number of people in the car and allows to recall this setting with a single button operation. This makes the listener(s) possible to obtain natural acoustic property regardless of the seat positions.

Parts Identification

Fig. 1

- [3] Display
- [4] Mode shift button
- [5] Fader control buttons
- [6] Balance control buttons
- [7] Position selector button

Fig. 2

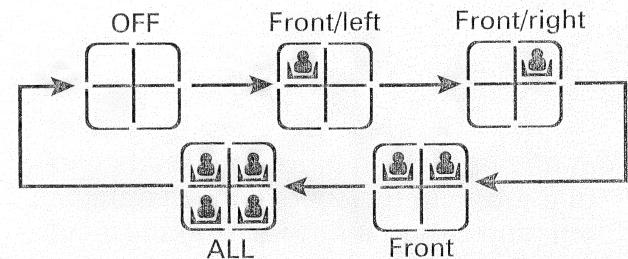
- [13] Operation display
- [15] Numeric display
- [16] Position indicator

Setting the Listening Position (Position selector)

Set the listening position according to the position(s) of the listener(s).

Press button [7].

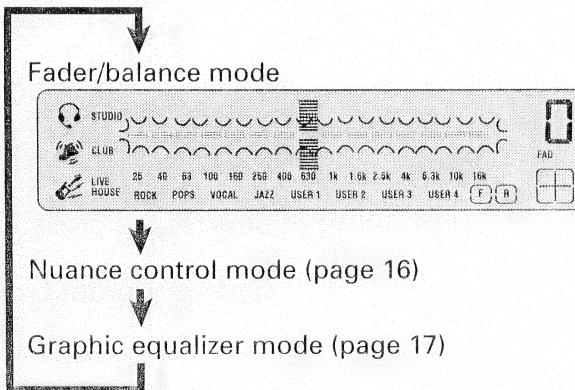
Each press of button changes the listening positions [16] as follows.



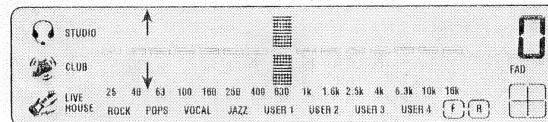
Fine tuning of the Position (Fader/Balance)

After choosing the position using the position selector function, it is possible to fine tune the sound image positioning by adjusting the fader and balance controls.

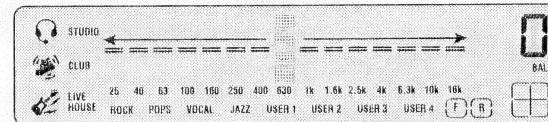
- The fine tuning can be applied independently for each position.
 - The condition after fine tuning will be stored in memory as the setting for each position. The next time the position is recalled, the setting after fine tuning will be recalled.
1. Press button [4] to switch to the fader/balance mode.
Each press of button changes the mode as shown below.



2. Press (\blacktriangle) or (\blacktriangledown) side of buttons [5] to adjust the volume balance between the front and rear (fader control). (Numeric display [15] shows "F25 — R25".)



3. Press (\blacktriangleleft) or (\blacktriangleright) side of buttons [6] to adjust the balance between the left and right (balance control). (Numeric display [15] shows "L25 — R25".)



Resetting the Position

The sound image positioning after fine tuning can be reset to the initial conditions of the fader and balance control.

Press and hold button [7] for more than 2 seconds.

A short beep sound is generated and the fader/balance are initialized.

- Only the currently selected position can be reset.

Note:

- The fader control is not used with a 2-speaker system. Set the fader to the center position.
- If your system is configured so that it does not use either the front or rear output of this unit, the position selector and fader will not function properly. If your system is a 4-speaker system which is configured without using either the front or rear output of this unit, the volume balance between the front and rear speakers should be adjusted on the head unit.

Adjusting the Equalizer Curve

Parts Identification

- Fig. 1**
- [3] Display
 - [4] Mode shift button
 - [5] Nuance control up/down buttons
 - Level up/down buttons
 - [6] Frequency up/down buttons
 - [8] Speaker selector button
 - [9] User's curve memory buttons
 - [10] Factory preset curve buttons

Fig. 2

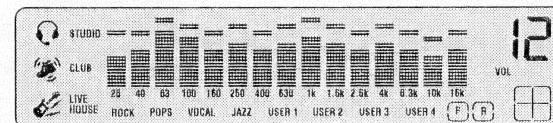
- [13] Operation display
- [14] Nuance control indicator
- [15] Numeric display
- [19] User's curve memory indicators
- [20] Factory preset curve indicators

Selecting the speakers to be Equalized

Select the speakers to which the equalizer effect is applied, from the front, rear or both.

Press button [8].

Each press of button changes the speakers affected by the equalizer as shown below.



ON: The frame is displayed.

OFF: The frame is not displayed.



	Both front/rear speakers
	Front speakers only
	Rear speakers only

Equalizer Curve Recall

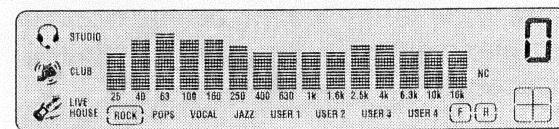
Four equalizer curves have been preset in memory (factory curves) to allow recalling with simple operation.

Factory Preset Curves

The 4 factory curves have been preset in the memory.

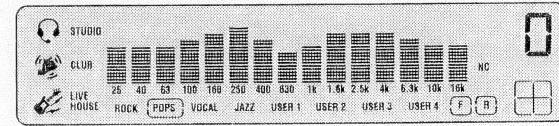
ROCK (F1)

Focuses on the band of rhythm section of rock music so that powerful sound can be reproduced with supplemented low and high ranges.



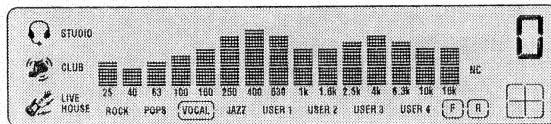
POPS (F2)

Particularly emphasizes the middle-range so that light pops sound can be enjoyed.



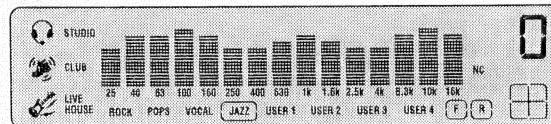
VOCAL (F3)

Emphasizes the portion of the voice band and minimizes the low-range to increase articulation. Use this mode to emphasize vocal signals or when listening to conversation.



JAZZ (F4)

Compared with ROCK mode, emphasizes the low- and high-ranges more intensively so the wide-range feeling can be obtained. Suitable to enjoy jazz music in a relaxed environment.



Recalling a Factory Curve

Press one of (F1) to (F4) buttons [10] to select the factory curve to be recalled. (The display frame [20] of the selected factory curve lights.)

Adjusting the Equalizer Curve

The equalizer curve can be adjusted in the following 2 ways.

Nuance control

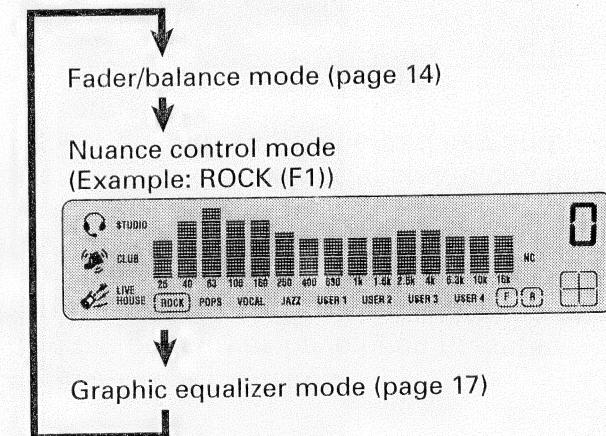
Overall adjustment of the effect of equalizer curve (nuance control) is possible.

15-band graphic equalizer adjustment

The level of each of the 15 bands (at 2/3 octave intervals) can be adjusted.

Nuance Control

1. Press button [4] to switch to the nuance control mode.
Each press of button changes the mode as shown below.



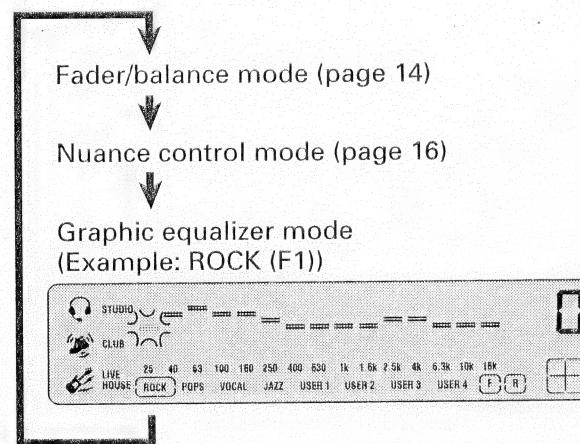
2. Recall the equalizer curve to be adjusted.

Recall a factory curve or user's curve (equalizer curve created and stored in this unit by yourself (next page)).
(Refer to "Recalling a Factory Curve" on page 16 and "Recalling a User's Curve" on next page.)

- A user's curve in which no equalizer curve has been set (= flat curve) cannot be adjusted with nuance control.
- Press (▲) or (▼) side of buttons [5] to apply nuance control.
Pressing the (▲) side increases the amount of compensation (increases the difference between high and low levels.)
Pressing the (▼) side decreases the amount of compensation (towards flat.)
(Numeric display shows "-6 — 6".)
- The nuance control can be applied separately to the factory curves and user's curves.
- The condition after nuance control of each factor curve or user's curve is stored as the setting value for than curve. The next time the factory curve or user's curve is recalled, the equalizer curve after nuance control will be recalled.

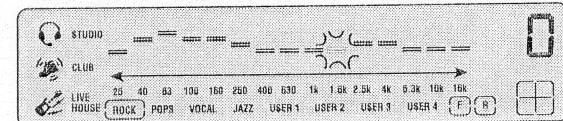
15-Band Graphic Equalizer Adjustment

1. Press button [4] to switch to the graphic equalizer mode.
Each press of button changes the mode as shown below.



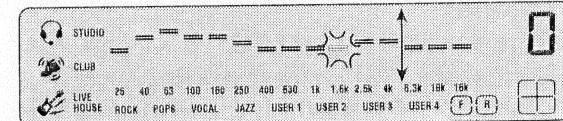
2. Recall the equalizer curve to be adjusted.
Recall a factory curve or user's curve (equalizer curve created and stored in this unit by yourself (next page)).
(Refer to "Recalling a Factory Curve" on page 16 and "Recalling a User's Curve" on next page.)

3. Press (◀) or (▶) side of buttons [6] to select the frequency to be adjusted.



25 Hz to 16 kHz (2/3 octave/step)

4. Press (▲) or (▼) side of buttons [5] to adjust the level.
(Numeric display [15] shows "-6 — 6".)



5. Adjust other frequency bands by repeating steps 3 and 4 for each of them.
6. Store the adjusted equalizer curve in memory.
The adjusted equalizer curve will be reset when another equalizer curve is recalled. If you want to retain the adjusted curve, store it in the memory of this unit.
(Refer to "Storing Equalizer Curves" on next page.)

Storing Equalizer Curves

The equalizer curves adjusted by the user can be stored as the user's curves in the memory under 4 buttons [9].

Storing a User's Curve in Memory

1. Adjust an equalizer curve as desired.
(Refer to "Adjusting the Equalizer Curve" on page 16.)
2. Press and hold one of (U1) to (U4) of buttons [9] that you want to store the equalizer curve for more than 2 seconds.
(The frame of the "USER 1 — USER 4" indicators [19] corresponding to the pressed button [9] blinks during storing and lights up after completion of storing.)
 - If an equalizer curve has already been stored under the button, the previous memory is cleared and the new equalizer curve is stored in memory.
 - When a equalizer curve is stored, its nuance control value is set to 0.

Recalling a User's Curve

The equalizer curves stored under buttons [9] (user's curves) can be recalled as required.

Press one of (U1) to (U4) of buttons [9] that store the user's curves to be recalled.
(The display frame [19] of the selected user's curve lights.)

Flat Curve Function

An equalizer can be reset to a flat curve with a simple operation.

Press and hold one of (F1) to (F4) of buttons [10] for more than 2 seconds.

The graphic equalizer mode is initiated and the corresponding equalizer curve is made flat.

Sound Field Control Function

The sound field control (SFC) function provides programs reproducing 3 typical sound field spaces of a studio, club and live house. The SFC makes it possible to reproduce a realistic sound field in the car compartment as if the listener(s) are actually present in that space.

Sound Field Programs Preset in this Unit

The following 3 sound field programs are preset.

STUDIO

Localizes the sound image to the axial sensitivity and does not add reverberation sound. Reproduces basic sound field by processing initial reflection sound from the walls of a relatively small mixing room.

CLUB

Reproduces music performed in discos for about 50 people. Suitable for reproducing a sound field with facilitated absorption of reverberation and enjoying music with powerful beat.

LIVE HOUSE

Reproduces music performed in a live house for 50 to 100 audiences. Highly effective for sound sources such as recorded gigs. Provides real reproduction of reflection from the walls and reverberation.

Parts Identification

Fig. 1

- [2] Sound field control button
- [3] Display

Fig. 2

- [12] Sound field control indicators

Recalling a Sound Field Program

Press button [2] to select the desired sound field program.

Each press of button recalls the sound field program in the order of STUDIO → CLUB → LIVE HOUSE → SFC OFF → STUDIO
 (The display frame [12] of the recalled sound field program lights.)
 (When the SFC is OFF, all frames [12] go off.)

Using the Remote Control

When the DSP/MAIN UNIT switch in the remote controller supplied with head unit is set to "DSP", some functions of this unit can be performed with the remote controller.

- The volume buttons and the attenuator button operate this unit directly and do not operate the head unit. (The volume level of the head unit can be adjusted with the volume buttons in the head unit.)
- Some functions of this unit can be operated with the DSP button.

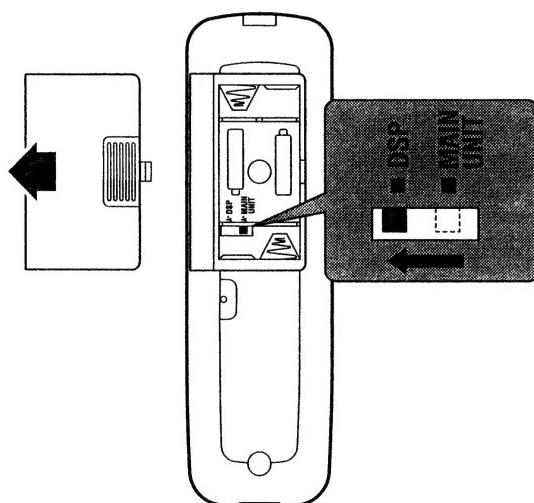


Fig. 14

Parts Identification and Function

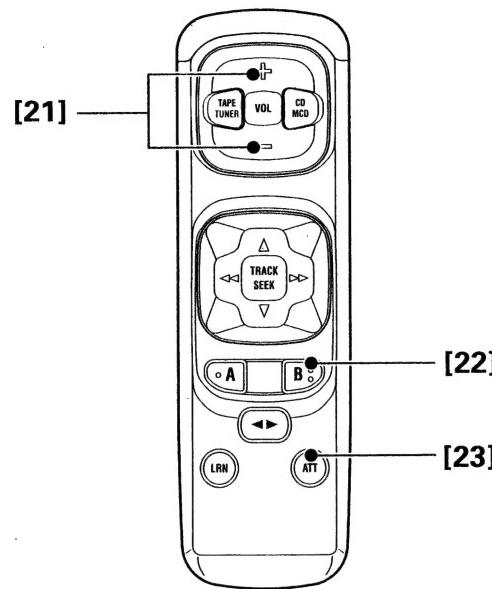


Fig. 15

[21] Volume buttons

Press the (+) side to increase volume and the (-) side to decrease volume.

[22] DSP button

Except when the user's curve is being recalled:

Used to recall factory preset equalizer curve. Each time the button is pressed, the selected factory preset equalizer curve changes in the sequence of ROCK → POPS → VOCAL → JAZZ → ROCK....

When the user's curve is being recalled:
Used to recall the user's curve. Each time the button is pressed, the selected user's curve changes in the sequence of USER 1 → USER 2 → USER 3 → USER 4 → USER 1

[23] Attenuator button

Press to reduce the volume to 1/10 of its current setting ("ATT" is displayed in the operation display [13].)

Pressing again returns the volume to its original level.

- This function is available using the remote controller unit only.

Specifications

General

Power source	14.4 V DC (10.8 — 15.6 V allowable)
Grounding system	Negative type
Dimensions	
(DIN) (mounting size)	178 (W) x 50 (H) x 132 (D) mm [7 (W) x 2 (H) x 5-1/4 (D) in.]
(nose)	188 (W) x 58 (H) x 17 (D) mm [7-3/8 (W) x 2-1/4 (H) x 5/8 (D) in.]
(D) (mounting size)	178 (W) x 50 (H) x 137 (D) mm [7 (W) x 2 (H) x 5-3/8 (D) in.]
(nose)	170 (W) x 46 (H) x 12 (D) mm [6-3/4 (W) x 1-3/4 (H) x 1/2 (D) in.]
Weight	0.6 kg (1.3 lbs.)

Equalizer

Equalizing frequencies (15-band graphic equalizer)	25 Hz, 40 Hz, 63 Hz, 100 Hz, 160 Hz, 250 Hz, 400 Hz, 630 Hz, 1 kHz, 1.6 kHz, 2.5 kHz, 4 kHz, 6.3 kHz, 10 kHz, 16 kHz
Equalization range	±12 dB
Distortion	0.01% (1 kHz, 500 mV, 20 kHz LPF)
Frequency response	20 — 20,000 Hz (0, -1 dB)
Signal-to-noise ratio	85 dB (IHF-A network)
Input level/impedance	500 mV/22 kΩ
Output level/impedance	500 mV/1 kΩ
Maximum output level	1.5 V/1 kHz, 1% THD

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:

Specifications and the design are subject to possible modification without notice due to improvements.